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ABSTRACT

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ED 389 253

# Being Open to the Possibilities:

# A Phenomenological Approach Toward Appreciating Diverse Ways of Knowing

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Based on a Doctoral Dissertation

Approved by the EDCI Department, College of Education

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Abstract

"What is it like to be in teaching together?" (Hultgren, 1991, p. 34) has been my guiding question for this hermeneutic phenomenological study with the full-time faculty of a small engineering college. I have noted our faculty struggles and conflicts arising from diverse ways of knowing associated with gender and academic discipline differences. I have also explored differing faculty orientations toward meeting with one another, learning, being teachers versus doing teaching, and teaching in an engineering environment. Finally, I make specific recommendations on ways of "being open to the possibilities" in our teaching lives in order that we may have the opportunity to realize our fullest potential as Human Beings. This involves encouraging ourselves and our students to be creative inquirers who appreciate diverse ways of knowing that cross academic boundaries from the spiritual, literary, and artistic domains to those grounded in logic often associated with science and technology.

**Being Open to the Possibilities: A Phenomenological Approach Toward Appreciating Diverse Ways of Knowing**

> Science is and always has been that admirably active, ingenious, and bold way of thinking whose fundamental bias is to treat everything as though it were an object-in-general--as though it meant nothing to us and yet was predestined for our own use. (Merleau-Ponty, 1964, p. 159)
>
> The revealing that rules in modern technology is a challenging ... that challenges forth the energies of nature [and] unlocks and exposes her. (Heidegger, 1977, pp. 14-15)
>
> The contest many scientists [and engineers] feel themselves engaged in ... with particular objects they study, reflects the contest they feel themselves engaged in with human others. Similarly, the need to dominate nature is, in this view, a projection of the need to dominate other human beings ... (Keller, 1985, p. 124).

Merleau-Ponty (1964) and Heidegger (1977), from their philosophicial vantage points, as well as Keller (1985), from her experiences as a female scientist in a male-dominated profession, yield valuable insights into the nature of certain conflicts with which faculty members have had to struggle at the small, private engineering and engineering technology college where I teach. Indeed this

college, whose motto is "Teaching Tomorrow's Technology," is a place where logic-based, scientific approaches to problem solving reign. The Computer, Engineering, Engineering Technology, and Telecommunications courses are featured. On the other hand, those offered by the General Studies Department, which I have been developing and teaching in my capacity as a full-time faculty member for nearly nine years, are classified as engineering support. Yet in spite of the heavy emphasis on technology, perhaps the college is best characterized by its casual, friendly, caring atmosphere where many of us, faculty and students alike, feel a strong sense of belonging. For these reasons and more, I chose this as the setting for my doctoral dissertation research.

## The Human Element

My year-long hermeneutic phenomenological study, officially beginning in Spring, 1993, involved most of the undergraduate faculty. Participants included twelve full-time professors and three chairpeople who, because of the small number of faculty members in their respective departments, also taught one or two classes each semester. At the outset, there were ten male technical faculty members, but later a woman engineer joined them. The all-female General Studies Department--two professors and one chair-person plus another female part-time faculty member, actively participated. A prevailing gender and teaching discipline polarity was evident as we shared our highly diverse views about teaching.

Registrar's data from Fall 1990 to the present has revealed that the total undergraduate student population at the main campus (full and part-timers) hovers around 600 with the average age about 30. Also, part-time enrollment has generally exceeded full-time. Typically, faculty members teach about 60-75 students per semester with 20-40 students in Freshman classes and fewer in higher level courses. Senior level courses commonly enroll eight to ten students. The faculty at this little college, with its challenging curriculum and liberal entrance requirements, takes pride in providing the students with abundant individualized attention.

## The Approach

Turning to my own college teaching experience and resonating with the lives of others in the texts I had read before undertaking the study had made me keenly aware of the need for a faculty to engage in a mutual sharing of lived teaching experiences. So I began my research inspired to serve as a catalyst for this type of sharing and reflecting with the hope of understanding and resolving conflicts arising from vast faculty differences.

As with any adventure, there were pioneer college professors who had gone before me, leading the way. As I initially sought to learn about phenomenology, I was able to wrap myself in the quilt of ideas fashioned by a group of travelers at the University of Maryland--Louise Berman, Francine Hultgren, Diane Lee, Mary

Rivkin, and Jessie Roderick, in conversation and collaboration with Ted Aoki, from the University of Alberta in Canada. In Toward Curriculum for Being: Voices of Educators (1991), the quilt metaphor, initially developed by Diane Lee but adopted by all, represents the group's struggles to more fully understand themselves and their individual and collective ideas about, and their lived experiences with, university teaching through a hermeneutic frame of reference. So their central question, What is it like to be in teaching together, became mine, also.

I then used Max van Manen's text, Researching Lived Experience: Human Science for an Action Sensitive Pedagogy (1990), as my research guide. The following interrelated activities formed the basis for conducting this research. First, I turned to and investigated the nature of our daily lived teaching experiences at the college since this seriously interested me. I then reflected on essential themes which characterized this phenomenon, described it through the art of writing and rewriting, and maintained a strong and oriented pedagogical relation to it. Finally, I balanced the research context by considering the parts and whole (van Manen, 1990, pp. 30-31).

Maintaining Journals

> ... if each one would employ a certain portion of each day in looking back upon the time which has passed, and in writing down his thoughts and

> feelings, in reckoning up his daily gains, that he may be able to detect whatever false coins have crept into his coffers ... not only would his daily experience be greatly increased, since his feelings and ideas would thus be more clearly defined, but he would be ready to turn over a new leaf. (Thoreau, 1993, p. 105)

Maintaining teaching journals formed a basic and important aspect of the hermeneutic phenomenological mode of inguiry. I continued to maintain my teaching journal and encouraged colleagues to maintain theirs. I found that this activity allowed me to understand my own teaching life and relieved tension. In fact, on those really busy days when I did not take the time to write in my journal, I felt a sense of loss as well as a pressure to try to regain that day through my writing. Even now, when I write, I can reflect on my daily teaching experiences when I have more time to think. Indeed, I do believe that it gives us all the opportunity "to turn over a new leaf." It serves as a very powerful faculty development experience. I only wish that more faculty members took advantage of this rare opportunity.

As I conducted my research, always from the insider's point of view, I probed deeper into the sensations and feelings associated with our teaching lives. However, there came a time, as the research progressed, that my approach changed from an investigative style to a more intuitive and insightful unveiling in

an effort to actually capture the feelings (van Manen, 1990, p.p. 64 - 65). As one of my advisors, Francine Hultgren, had tried to explain to me prior to my study, I would know when I had arrived at an understanding of an aspect of Being in teaching, for the writing would resonate with my present being and transport me back to that moment in time that I had tried to capture in text.

Everyday Conversations

At the core of the recorded information were everyday conversations shared among faculty members as we talked about our daily teaching lives. At the root of this approach lies the understanding of what conversation is, as revealed by Gadamer (1960/1989):

> Hermeneutic phenomenology contains within itself the original meaning of conversation and the structure of question and answer ... A person who seeks to understand must question what lies behind what is said. He must understand it as an answer to a question. If we go back behind what is said, then we inevitably ask questions beyond what is said. (p. 333)

An Invitation

Now please join me as we tour through time and space, as we enter the special places where little clearings for Being in teaching revealed themselves to our faculty during our quest to discover what it is like to be in teaching together at our college. Some of our adventures may surprise you, for they may "hit home."

## Turnings and Clearings

> Literary professionals at one pole--at the other scientists, and as the most representative, the physical scientists [and engineers]. Between the two a gulf of mutual incomprehension ... their attitudes are so different that, even on the level of emotion, they can't find much common ground. (Snow, 1964, p. 4)

### Faculty Turnings

I see Zack, who feels that his parents were his best teachers, strike a grandfatherly pose from his office computer or from his desk as he tutors students. He is very conscious of how he uses his own and his students' time and does not wish to waste it. Time is to be used wisely in the pursuit of knowledge. Heidegger (1977), in discussing his conception of "Enframing" as an ordering of the world of things, nature and man himself in a standing reserve for understanding and use, helps to explain this technological orientation and approach that is not unique to Zack, although Zack is more tenacious than some in his orientation to school time as time for doing his teaching. Zack, a math and computer science man, much prefers tight agendas to open-ended conversations. He admits that he has not spent much time considering what it is like to be in teaching either together or alone.

At yet another time, I am sitting at my desk grading papers. Sally slips into my office and quickly shuts the door. She asks me what I think about a student

we both teach who seems to have a "chip on his shoulder." As we explore the possible reasons together, we both feel more comfortable and confident about meeting his needs. "Conversation is a process of coming to an understanding" (Gadamer, 1960/1989, p. 385). As General Studies faculty, we often do spend time discussing our daily concerns and happy moments with one another.

A Sense of Place

> Once human life becomes the object of technical-scientific reconceptualization, the difficulties of that life become understandable only as technical problems requiring technical solutions. Being alive becomes something to solve, and finding one's life difficult, ambiguous, or uncertain is a mistake to be corrected. (Jardine, 1992, p. 122)

The Board Room has become synonymous with a-place-to-solve-teaching-related-problems-while-adhering-to-a-tight-agenda, although we often struggle to reach concensus during our Faculty Senate meetings there. On first thought it seems so logical, especially in an engineering setting, to try to correct any mistakes and problems we experience in our teaching lives.

It always seems challenging to try to achieve the right distance from ourselves and from time in order that we might have a little chance to experience and reflect upon our Being teachers together. I question whether or not this is even possible within the confines of the Board Room when most of the faculty gathers for

planned meetings. "Places have meaning: they are characterized by the beliefs of man" (Relph, 1976, p. 3). He goes on to say:

> There is not merely a fusion between person and place, but also a tension between them.... as objects in their own right, places are essentially focuses of intention.... Places are thus basic elements in the ordering of our experiences in the world. (pp. 42-43)

Designed to be the college's most elegant, formal meeting room, the Board Room brings to mind another view of Heidegger's (1977) concept of "Enframing." This time the emphasis is on enframing as an "ordering revealing." In other words, Board Room meetings provide opportunities to prioritize and objectify ideas, thereby ordering them for use. So, in Faculty Senate meetings, the most useful participants are those who are skillful at ordering ideas for use, thereby saving time. Little wonder that this is also frequently a setting for competition. To not have one's ideas ordered for use is to be in danger of being useless.

War and Peace

On the day of the final planning meeting for the Fall Faculty "Retreat," marked differences in attitude emerge between those of us on the General Studies faculty who are all strongly in favor of having a true off-campus Retreat, and several of the technical faculty who are just as strongly opposed. Zack, as well as

Harry and Dennis, have noted their opposition to the off-campus Retreat on the survey that Pat, the Faculty Senate Chairperson, had distributed a few days earlier. At the meeting, Zack expresses concerns about the "touchy-feely" nature of such gatherings, citing the spiritually-oriented dictionary definition of the word Retreat. Judy, Sally and I all explain that the 1991 Retreat had been nothing like that, that it had focused on many aspects of academic Quality, but Zack's mind is made up. Several of the technical faculty do not want to waste their time; they want to have their offices close at hand so that they can duck into them to get work done during break times. Therefore, they insist on staying at the college.

Judy, Sally, and I protest. We feel that the on-campus location will hamper our abilities to communicate effectively with one another about important teaching-related matters since we could easily be distracted by conflicting demands from administrators, students, visitors, and telephone callers. Outnumbered but hardly defeated, we decide right then and there to hold our own General Studies Retreat in the fall at Judy's house.

Afterwards Dennis, who suddenly realizes that he has played a key part in squelching the very event that he has been yearning for--time for all of us to just "kick up our heels" and talk about our teaching lives--apologizes for the role he has played in killing the Retreat time. He later tries to reverse the decision, but it is too late. Instead, we begin to plan "The-Retreat-That-Wasn't."

Before investigating the nature of the session itself, it is helpful to more fully

explore the nature of the seldom-overt-but-often-felt dispute between the technical and non-technical ideologies that reveals itself as eruptions from those of us on the General Studies faculty. Once in a while we feel a need to blast through the bedrock of logical-objectivity-as-the-way-to-knowledge that underlies our technologically-oriented institution. Snow (1964) helps to explain this phenomenon as he rather graphically reveals some basic differences in attitude between the two groups. "The literary types call the scientists [and engineers] 'ignorant specialists.' Yet their own ignorance and their own specialisation (sic) is just as startling" (p. 14). On the other hand, he goes on to say, the scientists' "imaginative understanding is less than it could be. They are self-impoverished" (p. 14). In deference to the scientists, however, he indicates that non-scientists don't fully appreciate the great work of scientists that has had such a profound impact on our lives in the twentieth century. "It is as though, over an immense range of intellectual experience, a whole group was tone-deaf..." (p. 14). He is sad about the lack of appreciation each group has for the other's intellectual strivings. For it is only in a context of understanding and tolerance that there can be a time for peace and harmony within the faculty. The Retreat-That-Wasn't provides such an opportunity.

Turning Back the Clock

In an effort to try to minimize formality and maximize free-flowing conversation, we reserve and rearrange the Faculty Lounge for the morning

session of the "Retreat-That-Wasn't." The Board Room is transformed and humanized by good food and beverages. We all try to "make do" with our substitute Retreat.

In my role as facilitator, I begin the discussion time by slowly reciting the following selection from the article entitled, "Layered Voices of Teaching: The Uncannily Correct and the Elusively True," by Ted Aoki (1992):

> I ask you now to think of a really good teacher that you have experienced in your time. Allow him or her to be present before you. (p. 27)

As we try to do this, we take turns sharing compelling anecdotes about our own educational experiences, focusing not only on our best, but also on our worst teachers. Surprisingly, only a few minor disputes erupt.

To "prime the pump," I urge Bob to retell his story about his best college teacher since several faculty members had been absent when he had shared it a few months earlier. Bob tells us that this instructor had played a key role in his engineering education by making him show her, on a board in her office, how to do all the problems he had gotten wrong on an important exam. After a brief discussion, Bob clarifies certain key points:

> She made you go back and read more carefully to <u>really</u> understand what you were studying. She did not humiliate because the board technique was used in the privacy of her office.

Then one of Pat's anecdotes features a memorable math teacher from his homeland in South Africa as he recalls:

> We had a mathematics teacher who was extremely rigorous about everything ... you didn't open your mouth in class--he was extremely strict.

Pat goes on to say that this teacher, although he excluded class discussion, taught math in a rigorous fashion, insisting on mastery. This enabled Pat to pass the challenging end-of-the-year exams.

Pat's personal approach to teaching also revolves around rigorous lectures; this is true for the other engineering and engineering technology faculty members, as well. The emphasis is more on solo mastery of the subject matter, and the classroom setting itself isn't very evident. Classroom control is important to them; this is a necessity if they are to properly disseminate the subject matter in a timely fashion. Time and subject matter alike are treated as valuable commodities in keeping with the Heideggerian concept of Enframing.

At the same meeting Judy, one of the General Studies professors, fondly recalls one woman teacher who taught Latin and another who taught literature:

> They have had a huge influence on my academic life. They had enormously high expectations. If you didn't have your homework done and they called on you, neither of them would belittle you, but you still felt awful because you didn't have anything to say.... Beyond that, they'd do something that I do .... If

> you handed in a paper that wasn't really good they handed it back, told us that it wasn't acceptable and required us to do it again.... Having that happen about twice taught us not to hand in trash any more.

Judy's anecdote reflects the importance of "us" within the classroom setting--a sense of belonging to the class itself. Mastering subjects is in the context of "us," Judy and her classmates, plus teacher motivators who demanded excellence from their classes.

Along this same line, Sally, the Chairperson of the General Studies Department, shared an account of one of her best teachers in graduate school:

> She had tremendously high expectations for the students ... she just demanded so much ... but she also expressed such joy and enthusiasm when the students got it and understood it.

Sally concludes her account by saying:

> So it was her high expectations, her own enthusiasm, and her enjoyment of the students themselves--this was all really positive.

Again, as with Judy's account, there is a strong sense that Sally belonged to an academic setting where a challenging atmosphere for learning was fostered by a teacher who valued her students and their expressions. There is evidence of learning within the context of classroom, evidence of the creation of a place for learning together, and evidence of a womanly way of learning and knowing. My own excellent educational experiences, too, have involved interaction and

discussion--a sense of shared learning and belonging. Gilligan's (1982) concept of interdependence is evident in our teaching accounts. As General Studies professors at our college, we strive to create classroom atmospheres conducive to learning. Then, too, we commonly engage our students in class discussion and group activities and encourage a sense of belonging within the classroom, unlike our technology-oriented colleagues who encourage a sense of belonging during one-to-one discussions. As Aisenberg and Harrington (1988) state:

> to become professional, for women, is not simply to acquire a marketable skill, but to acquire a dignified, empowering identity.... the lure of teaching for many women is the desire to reinvoke the transformational experience, their own experience of growth and change, for others ... a commitment of change through learning. (p. 39)

Being and Doing

After the "Retreat-That-Wasn't" Pat, as Chairperson of the Faculty Senate, was responsible for preparing the formal minutes for both the morning session and the afternoon business meeting. In what ways might Pat's version of the "Retreat" differ from mine? Here is an excerpt:

> The morning session, what-it-is-like-to-be-in-teaching-together, produced many anecdotes about the good and bad teachers faculty members had experienced. I will leave the details and nuances to Tricia's notes and simply record here some of the attributes we felt good teachers generally possess. A

good teacher:

a) is dedicated....

j) is knowledgeable about the subject matter....

n) is flexible.

o) respects the students.... (8/17/95)

For this meeting, as well as other meetings and discussions related to my research, Being in Teaching has been the primary focus in my effort to help our faculty "to become more fully who we are" (van Manen, 1990, p. 12). Pat's minutes, on the other hand, feature the Doing of teaching, a by-product that was extracted from the faculty sharings. Pat's approach, in our particular college setting, as well as in the techical writing classes that I teach, is highly valued. Data reduction and objectification reign. This approach to knowledge is so prevalent, it makes it difficult for many of the engineering and engineering technology members to consider that sharing anecdotes that emphasize subjective feelings about teaching may yield more than "nuances and details."

First, there is the long, slow process of helping faculty members to become open to the possibility.

Turning to the Elements

At the college, administrators frequently share engineering-related articles with the faculty. Sometimes an administrative reaction to the articles is attached. So the faculty is not surprised to receive a memo from the administration in

response to two articles in The Wall Street Journal. The topic is the bleak job market, and the memo serves to reinforce the college's goal--to graduate students well-versed in the latest technology. While focusing on the college's present approach to producing "marketable" students, it also contrasts its successes with the plight of the Humanities or Arts graduate. The memo then infers that this difference might be because the only purpose of The Arts is to react to social issues and that people could only relate to those reactions in a second-hand way. Unfortunately, this statement inadvertently casts the General Studies curriculum into a secondary role within both the college and society at large by giving it an indirect, reactive rather than influential and proactive purpose. But is this really the case?

Sally and I hold an informal meeting where we explore what it feels like to have our General Studies disciplines minimized. What is it like to be a General Studies professor in a college that focuses on engineering and engineering technology? Sally decides to write a very strong memo. An excerpt follows:

> The General Studies Department occupies a devalued position in the college.... Although we are considered to be on the bottom of the academic ladder, ... we are the individuals who are called upon to head committees, sponsor honor societies, develop and organize faculty workshops, and advise and mentor students.... Further, it is generally accepted that if you want something done in the faculty, put a General Studies person in charge.... What

> the General Studies Department offers to the engineers of tomorrow is another way of knowing. Indeed, it is this diversity of perspective that has made this country great.... (memo, 5/25/93)

Elements of care. General Studies faculty members have primary faculty responsibility for the two honor societies, Alpha Chi and Tau Alpha Pi, and each typically belongs to or chairs more than the required number of committees. In a nutshell, we are college community builders and preservers by providing a strong feminine, Humanities-oriented presence.

Judy, Sally and I all strive for interdependence (Gilligan, 1982); we use our feminine voices to fight for an effective and humane college community that is in keeping with women's needs to "live in connection with others" (Gilligan, 1982, p. 63). We accomplish this through our active service on committees.

But do we care too much and is this caring valued? "Caring is not always agreeable; it is sometimes frustrating and rarely easy" (Mayeroff, 1971, p. 51). There are rewards to caring, though, since it helps us to have a greater sense of belonging to the college. As Mayeroff (1971) notes, "In the sense in which a [person] can ever be said to be at home in the world, [she] is at home not through dominating, or explaining ... but through caring and being cared for" (p. 2). Might we also experience "a reflective nature of joy that accompanies a realization of the responsive relation of caring" (Noddings, 1984, p. 144)?

Elements of support. What about the nature of our status in a profession

where the term "Professional," is frequently associated with masculine rationality and objectivity? Objective ways of knowing rather than knowing intuitively or through heart felt caring, are most widely recognized at our college where the mission, as stated in the catalog, is to offer "academic and professional programs in engineering, engineering technology and engineering support." All of the General Studies courses fall into the last category. This is often interpreted to mean that courses with technical relevance such as Technical Writing are more valuable than those without. Yet those of us in General Studies feel that our students need more of a balance of humanities courses to be well-rounded, productive citizens.

Humanities and arts elements. At the college, students are required to take the Arts and Ideas survey course where they explore famous paintings in well-known galleries; participate in a cultural Scavenger Hunt; experience the richness of a live symphony; read, act out parts for, and view plays; listen to the voices of the poets and authors, explore the hidden meanings and create knowledge in the process. Intense!

Are the Arts and Humanities courses valued by the larger college community? This varies. General Studies faculty members have been criticized for making the courses too challenging. We fail students who do not do college-level work; we make them earn good grades. Students resent the fact that it is often harder to get "A's" in General Studies courses than in technical ones. Engineering and

engineering technology professors, in turn, do not always support our efforts, either. For instance, one technical professor said to a student who was devoting a lot of time to his General Studies courses, "Keep your priorities in order."

We feel that there is a widespread lack of recognition of the importance of the Arts and Humanities courses in the shaping of future engineers. Yet Sally's powerful words keep echoing in my ears: "What the General Studies Department offers to the engineers of tomorrow is another way of knowing."

In their element or are they? Through casual hallway and office conversations with professors in the technical arena like C. Case, George, and others, I have become very aware of their spiritual orientations. How well do the spiritual and technological aspects of their lives mesh?

One day in the hallway I ask C. Case if he feels that his religious orientations and beliefs have influenced his own approach to teaching. He assures me that they have. However, when I urge him to write about these influences in his teaching journal, since he is one of the most active writers, he is reluctant. He feels that he must maintain a separation of church and work; he does not feel that it is appropriate for him to officially mix the two.

George, also an active member of his religious group, is known for being a considerate gentleman who "lives" his religion through his kindness and selfless service to the college community. As Mayeroff (1971) reminds us, "There is a selflessness in caring that is very different from the loss of self ..." (p. 31). For

example, George has often volunteered to take notes and write the minutes for numerous meetings. This is a task many of us shrink from, but George cheerfully provides this service. But is there a way that George can mix his spiritual ways of being with his technical subject matter the way Judy, Sally, and I sometimes can with General Studies courses?

Other faculty members have artistic talent. Might C. Case, George, and others with strong spiritual and artistic orientations be living with tensions that are equivalent to ones felt by General Studies faculty?

Chuck, for instance, sings beautifully. Yet his belief system is strongly grounded in metaphysics. After Chuck, Sally, and I engage in numerous verbal jousts about the nature of "Reality," and Sally puts a sign on her door that reads, "Question Reality," Chuck decides to write about his views. Excerpts follow:

> We can perceive reality, and the data from our senses (when used with our knowledge for sensory perception) is reliable.... The objection may be raised that even with knowledge of perception, all we are seeing is 'reflections' of an object but not the essence of the object. There is no need to force a dichotomy such as this.... The character of an object <u>is</u> the object.
>
> The concept of <u>objective</u> reality (or rather objectivity) is important. Without this concept, there can be no absolutes and no standards.
>
> Certainty is <u>contextual</u>. Certainty is based upon what we know (and not upon what we don't know). If <u>all</u> of the evidence points to a particular

conclusion, we have no choice but to be certain about that conclusion. (11/10/93)

Just what is this logic-based approach to knowledge like that Chuck is advocating? Bruner (1985) provides clues:

> ... logical science and the paradigmatic thinking that supports it rest upon an eventual verifcation and logical proof that prevails. (p. 113)

Are there limitations to seeking truth through logic? Can truth making in the arts be verified by logic?

Another Way of Knowing

The scientific approach, according to Heidegger (1971), cannot be used to study the "nature" of things. He reveals that by using the scientific approach "the objectiveness of the world remains reckoned in that manner of representation which deals with time and space as quanta of calculation, [but] which can know no more of the nature of time than of the nature of space" (p. 129). Heidegger (1977) further explains: "The revealing that rules in modern technology is a challenging ... that challenges forth the energies of nature" (pp. 14-15) through unlocking and exposing. Enframing or framing, according to Stambaugh (1992), "threatens to push man to the extreme of perpetrating only what is revealed in the mode of ordering and admitting as real only that which fits into this mode" (p. 31). Since neither the Being of humans nor the creations in The Arts properly fit into this mode of truth-seeking, according to Heidegger, little wonder that there

are some basic conflicts between those who live and teach within the realm of The Arts and those who live and teach in a technological manner.

"Art lets the truth originate" (Heidegger, 1971, p. 77) while "poetry is the saying of the unconcealedness of what is ..." (p. 74). "Art is a setting-into-work of truth" (p. 77). The truth lies within the work of art and is revealed by those who read, or gaze at or listen to its presence. The truth arising from art, the truth that discloses itself to those who witness it, "can never be proved or derived from what went on before" (Heidegger, 1971, p. 77). Therefore, those who believe very deeply in the truths revealed through science may not even recognize the truths revealed through the Arts without some means of communicating across these barriers to diffuse the conflict that is generated by this difference.

Dewey (1958), although his arguments on aesthetics are metaphysical, appears to have an overall artistic sensibility that is compatible with phenomenologists states, "Art celebrates with peculiar intensity the moments in which past reinforces the present and in which the future is a quickening of what now is" (p. 18). He goes on to say:

> The art of literature ... works with loaded dice; its material is charged with meanings they have absorbed through immemorial time.... Architecture, sculpture, painting can stir emotion profoundly. The 'right' farmhouse come upon in a certain mood may constrict the throat and make the eyes water as does a poetical passage. But the effect is because of a spirit and atmosphere

due to association with human life. (pp. 239, 238)

Judson (1956) attributes her attunement to art to her upbringing where Quaker meeting houses "are themselves forms of abstract art, where relationships of line, color, and especially space, convey emotions" (p. 3). In talking about present art as symbol, especially abstract art, she speculates:

> It is also a yearning to speak a universal language ... we know that we are creatures, limited by time and space, but we also know that truth, beauty and tenderness are aspects of the absolute. (p. 4)

According to Eisner (1992), the Arts "celebrate imagination, multiple perspectives, and the importance of personal interpretation" (p. 594). Also, "the arts make discovery possible. Discovery occurs as students learn through adventures in the arts something of the possibilities of human existence" (p. 595).

Levin (1989) who encourages us to more fully develop our capacities to listen, expresses genuine concern for adults who have grown up grounded in metaphysics with its logical way of knowing. The world becomes such a serious business that "there is no time for music, not even--or perhaps least of all--the music of the celestial spheres" (p. 210). This involves a loss of joy that goes hand in hand with losing the capacity to really listen.

In what ways is truth revealed through spirituality? Palmer (1983) talks of spiritual knowledge as a kind "that originates not in curiosity or control but in compassion, or love--a source celebrated not in our intellectual tradition but in our

spiritual heritage" (p. 8). Then too, Huebner (1985) reveals:

> Spirit refers to that which gives vitality.... It indicates that life is more, or can be more, than the forms in which it is presently lived ... spirit refers to the possible and unimagined--to the possibility of new ways, new knowledge, new relationships, new awareness. (p. 163)

## Being Open to the Possibilities

At this juncture, I must note that I have a great deal of respect for science and technology and for my colleagues and husband who teach in this arena. My undergraduate degree was in Botany, and I have found that my solid grounding in the sciences has been invaluable to me in many ways, especially in my teaching life within our engineering college. Although I find science to be intellectually gratifying, my passions are in the Arts. Through poetry, painting, and music, I discover important truths about myself and the nature of my family and world. From the core of my Being, I worry about what appears to be technological encroachment into every aspect of society. I yearn for an educational system that is more open to the possibilities afforded by a mix of insights from science, technology, the Arts, and the spiritual realm. I thrive on balance, harmony, and diverse ways of knowing. I do not wish to be so caught up in Doing and Enframing that I cease to Be. I know that I am not alone in my concerns. What do others recommend?

C. P. Snow (1964), for instance, states:

...it is imperative to close the gap between the scientists and the literary intellectuals and all the great thinkers... It is dangerous to have two cultures which can't or don't communicate.... when science is determining much of our destiny ... (pp. 44, 98)

Pedagogical Clearings

To bring knowledge to life, to enliven it, it must be brought into the living form of the human being.... By enlivening knowledge, the student is also empowered. To enliven knowledge is to accept it with doubt and to place it back into the eternal cycle of openness, love, and hope. (Huebner, 1985, pp. 172-173)

To teach is to create a space.... To study with a teacher who not only speaks but listens, who not only gives answers but asks questions and welcomes our insights... (Palmer, 1983, pp. 69-71)

Teaching simultaneously performs the connection of art and practices the so-called abstention of science.... teaching is both art and science.... Teaching is about connection to the world and to the other people with whom we share the world. (Grumet, 1990, p. 119)

How might we see detour predetermined, not chosen, as challenge, not barrier? .... When viewed as possibility, detour has the potential of creating a context in which we see opportunities ... (Roderick, 1991, pp. 106-107)

... simplification, grounded in responding to what is basic to me ... is

> liberating ... space and time seem more spread out, making possible a greater play of the imagination and the development of new possibilities. (Mayeroff, 1971, p. 51)

I have drafted a chorus for a teaching song revealed to me through listening to the voices within these texts. Might it not be a good song for becoming?

Open to Possibilities

To teach is to be open to possibilities...
To create and liberate spaces that enliven knowledge,
To encourage students to connect with our world,
To liberate by questioning and listening,
To welcome detours--empowering self and students,
To encourage students to learn from each other,
To be artful inquirers across discipline barriers,
To free up time to encourage the creative,
To challenge our students and ourselves is
To Be Open to the Possibilities.

Have other writers suggested ways to close the gap between scientists and technologists on one hand and humanities and arts professionals on the other? Keller (1985), speaking with the voice of a concerned female scientist, indicates:

> A healthy science is one that allows for the productive survival of diverse conceptions of mind and nature, and ... diverse strategies. (pp. 148-49, 178)

In addition, Heidegger (1977) states:

> ... every researcher and teacher of the sciences, every [hu]man pursuing a way through a science, can move, as a thinking being, on various levels of reflection and can keep reflection vigilant... (p. 182)

Heidegger (1977) then cautions that we need to continue hermeneutic questioning to avoid getting to the point that "responding loses the character of questioning and becomes simply saying" (p. 182).

Softening Boundaries

Might these researchers and philosophers also be stressing that we need to be open to the possibilities of both the essence of science and of Being itself if we are to survive? These seem to be very good reasons to soften discipline boundaries. Rivkin (1991) would like to "work on restructuring knowledge--to make it more holy, holistic and integrated" (p. 74). And Thomas (1994) urges us to look "more closely at the common ground that science shares with all disciplines ... bewilderment" (p. 454).

The Arts: Openings to Possibilities

Within the boundaries of a college that prides itself in teaching tomorrow's technology, I suggest that "being open to the possibilities" includes being open to creative, intuitive, and spiritual ways of knowing through a broadening of the curriculum. I share van Manen's (1985) concerns about changes in students'

reading habits as a result of the great popularity of computerized or audio visual discs. Our students seldom read novels. Yet this kind of reading encourages self-understanding because of the reflective nature of the experience. Judy, Sally, and I have often noted that our students are especially susceptible to the lure of computer and disc technologies as well as movie versions of books and book condensations.

Might not our task as teachers be to encourage our students to experience the "real thing," with its turnings, clearings and digressions, rather than pre-interpreted versions and sanitized condensations? In a similar fashion, Palmer (1983) cautions us that "In our quest to free knowledge from the tangles of subjectivity, we have broken the knower loose from the web of life itself" (p. 26)--a very dangerous thing to do, especially considering the potential powers that lie within technology itself. Life is simply not packaged like a computer program.

Questioning, questioning, questioning. The kinds of questions that would make a welcome addition to our teaching lives are not the typical science and technology based challenge questions, but rather, as Hultgren (1991) explains, they involve "raising questions of the text to make it speak" (p. 43). We need to approach questioning in this new way, for, as Heidegger (1977) notes, the sciences have not been in a position to question their essenses. They cannot "set themselves before themselves, by means of their theory and through the modes of procedure belonging to theory" (p. 177).

As Palmer (1983) notes, "within the space of incisive questioning truth is given room to make itself known" (p. 183). Incisive questioning involves an opening up to truth and scientific questioning involves decisive questioning, a technique of reducing data to more manageable size.

Lest we forget. Might not teaching and learning be more vital and exciting if we, as professors, create spaces within our classrooms and our curricula and with each other for being open to all of these possibilities and ways of knowing? But first and foremost, perhaps all of us--scientists and literary people, mathematicians and artists, alike--could be more receptive to our diverse ways of knowing if we would finally recognize that we are all Human Beings.

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